ABSTRACT OF THE DISCLOSURE

The control system of the present invention is provided in a hybrid vehicle with a combustion engine for outputting a driving force, an electric motor for generating a force for assisting the output from the engine, depending on driving conditions, a power storage unit for storing electric energy generated by the motor acting as a generator using the output from the engine and electric energy regenerated by the motor when the vehicle decelerates. The control system comprises: an output assist determination device for determining, based on a determination threshold value as the standard, whether to assist the output from the engine by the motor, depending on the driving conditions of the vehicle; an air-fuel controller for changing the air-fuel ratio of the mixture, which is to be supplied to the engine, to a condition leaner or richer than the stoichiometric air-fuel ratio; a determination threshold value changer for changing the determination threshold value, depending on whether the air-fuel ratio of the mixture is leaner or richer than the stoichiometric air-fuel ratio; and a determination threshold value change prohibiting device for prohibiting the operation of the determination threshold value changer when the air-fuel controller changes the air-fuel ratio of the mixture from a condition leaner than the stoichiometric air-fuel ratio to a condition richer than the stoichiometric air-fuel ratio.